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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,762	09/16/2005	Maurits Ortmanns	31583-216855 RK	6953

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EXAMINER

YOUNG, BRIAN K

ART UNIT PAPER NUMBER

2819

DATE MAILED: 04/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/530,762

Applicant(s)

ORTMANNS ET AL.

Examiner

Brian Young

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 11 and 12 is/are rejected.
- 7) ☒ Claim(s) 2-10 and 13-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 September 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/16/05 and 11/10/05

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Detailed Action

Disclosure Objections

1. The specification is objected to because of the following informalities: the Brief Description of the Drawings (page 8) refers to "figure 6" and "figure 7". However the drawings show figures 6A and 6B, and, 7A, 7B, and 7C. Appropriate correction is required.
2. The drawings are objected to because figures 1-3 are referred in the specification as being "prior art" but are not labeled as such.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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3. Claim 2 is objected to because of the following informalities: the claim recites "said capacitor is discharged over said resistance *to mass*" which seems improperly worded. The term "to mass" should be deleted for clarity. Appropriate correction is required.

35 U.S.C. 103 Rejection

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Locher.

Locher discloses (fig.1) a digital to analog converter (4) in a continuous sigma delta modulator (1).

Locher recites (col.2, ln.55-58):

"FIG. 1 shows a diagram of a **sigma delta modulator 1** comprising an integrator 2, which is used here as a low-pass filter, a quantizer 3, a **D/A-converter (digital-to-analog converter) 4** and an adder 5."

Locher further recites (col.3, ln.5) that control may be "**continuous**".

In another embodiment (fig.3) of Locher a controllable current source (14) is shown used to provide feedback to the modulator. Note that Locher's figure 3 is similar to applicant's circuit shown in figure 4.

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Locher recites (col.3, ln.33-41):

"According to the invention the **current source 14 is a controllable current source**, which makes it possible to adjust or to control the current to the switch 12 and thus the current for charging or discharging the capacitor 11. The **current determines the charge collected on the capacitor 11 and hence the voltage thereon**, which is fed to the inputs of the operational amplifier 13. Thus, feedback factor is controlled by adjustment or control of the current of the current source 14."

It is noted that Locher does not explicitly show that the "current controller converts a clock signal into a voltage signal which *has within a clock duration a reproducible curve ending with a falling flank*".

However, as noted above, Locher recites that the current source controls the current for "charging or discharging the capacitor 11" and the voltage applied to the capacitor. Therefore, control of switch 12c (fig.3) implements the clocking signal for controlling when the voltage is applied from the current source to the capacitor. The "reproducible curve" during the clock signal would be represented by the charging/ discharging of the capacitor. It is noted that applicant's claim 2 recites that a capacitor is used for applying the voltage signal also.

Therefore, it would have been obvious to of ordinary skill in the art, and having the sigma-delta modulator with a controllable current source taught by Locher, that a clocked, controllable current source could be used to implement control of the feed back (DAC) portion of the modulator. Further it would have been obvious that the controllable current source controlling the current applied to a capacitor could be controlled with a signal such that the charging/ discharging of the capacitor would represent a "reproducible curve" type signal due to the natural charging/ discharging characteristics

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of the capacitor. Also, any noise associated with the clocking signal would be reduced by the inherent nature of the capacitor to block spurious noise effects from the clock pulse.

6. Claims 2-10 and 13-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Draxelmayr and McDaniel et al disclose sigma delta converters having controlled feedback to the input.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Young whose telephone number is 571-272-1816. The examiner can normally be reached on Mon-Fri 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rexford Barnie can be reached on 571-272-7492. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Brian Young
Primary Examiner
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